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May 15, 1997

U.S. Army Engineer District, Alaska
Attn: CEPOA-EN-EE-II (Beauchamp)
P.O. Box 898
Anchorage, AK 99506-0898

Dear Ms. Beauchamp:

RE: Review Comments for the Risk Assessment Sections of the Draft Phase II Remedial Investigation/Feasibility Study, Gambell, Alaska

Thank you for providing a copy of the above-mentioned document for Department review. Northeast Cape and Gambell FUDS were transferred from the Fairbanks office in April. It is my understanding that Ms. Tamar Stephens reviewed the Phase II RI/FS and made comment on the report except for the risk assessment sections. The risk assessment sections of the Phase II RI/FS and supporting documentation were sent to a term contractor for review. I received the term contractor comments on April 3, 1997. I have completed my review of the term contractor's comments and the attached table consists of the overall review of the risk assessment sections of the Phase II RI/FS document.

There are a lot of comments and concerns presented in the comments. I understand that you are trying to program 1998 at this time. I would like to work with all concerned to address everyone's concerns to facilitate keeping the process going.

I look forward to continuing to work with you on this project. If you have any questions regarding my comments or would like to meet to discuss them, please feel free to contact me at 269-7691.

Sincerely,



Katarina Rutkowski
Environmental Specialist

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**PHASE II RI/FS
RISK ASSESSMENT
GAMBELL, ALASKA**

ADEC COMMENTS - Katarina Rutkowski

Comment No.	Page	Section/ Paragraph	Comment/Recommendation
		General	The Phase II RI/FS states that the sites to be addressed during the Phase II investigation were selected because one or more media within each site contained contaminant concentrations that exceeded conservative risk-based screening criteria (RBSCs). However, ecologically based benchmark criteria were not applied during the site selection process. While this may be appropriate at some sites where there is no complete and/or significant exposure pathway to ecological receptors, the supporting text does not clearly identify which sites lack such pathways. Ecological risks appear to have been overlooked during the selection of sites to be evaluated in the Phase II RI/FS. Please provide more detail on the selection of the sites to be carried through the Phase II RA, including a discussion on ecological risks at each site and the rationale for including or excluding sites from the human health risk assessment.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
		General 1a	Please verify the risk-based concentration (RBC) values used for five of the analytes. Please clarify whether the RBC presented for arsenic is the carcinogenic RBC. For lead in soils, please clarify why the value of 400 mg/kg was not used as the screening level (EPA 1994). For PCBs, please clarify why the updated RBC of 0.083 mg/kg was not used. In the absence of specific information on the type of chromium, please use the RBC for chromium VI (rather than chromium III) for screening.
		1b	It appears RBC for the following chemicals of potential concern are missing: carbon disulfide, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene. Please clarify why RBCs for these COPCs were not listed.
		1c	Please clarify how analyte concentrations were compared to regulatory benchmarks (e.g., whether average or maximum detected concentrations were used). For example, at Site 1 (Table 6-1), arsenic concentrations in soil were reported as 1 to 9 mg/kg; the background level is 6.7 mg/kg, and the RBC is listed as 0.36 mg/kg. Although this analyte was detected at levels above background and above the RBC, it was not identified as requiring action (i.e., it is not identified as a COPC).
		1d	In light of these three concerns, please provide more detail on the screening methodology and screening values and present the entire screening process in the baseline risk assessment.
		General 2a	Please include a more comprehensive rationale for excluding all sites from ecological risk assessment. This is particularly critical given the heavy reliance of the local indigenous populations on subsistence hunting and fishing.
		2b	Please clarify whether an objective of the RI/FS process is the protection of the ecological resources within the region, including subsistence and nonsubsistence species, the latter of which may be essential to the continued survival of the former.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
		General 3	Please note that the Department does not concur with the recommendation for no further action for sites without adequately addressing the potential for ecological risks within the framework of established ecological risk assessment guidance.
		General 4a 4b 4c	<p>Please include all sites with detected concentrations that exceed human health or ecological risk-based screening concentrations during Phase I or Phase II of the RI in the risk assessment. Results of the Phase I RI indicate that, at a minimum, Sites 2, 3, 4B, 4D, 5, 6, and 7 had detected concentrations of contaminants in excess of human health risk-based screening concentrations. Please discuss these sites and additional sites identified as a result of addressing the review comments in the site evaluation section of the risk assessment, and summarize the analytical results.</p> <p>Please document the selection of compounds of potential concern (COPCs) for each of these sites. If no COPCs are found at a given site based on maximum detected concentrations during Phase I and Phase II sampling compared with appropriate human health and ecological RBSCs and background concentrations, the site may be eliminated from further consideration in the risk assessment.</p> <p>Please discuss the potential for human and ecological exposure to contaminants at each of these sites (including development of a conceptual site model) in the exposure assessment section; if sites are eliminated from further consideration because there are no complete pathways, please provide the rationale for doing so.</p>
		General 5	Please include an uncertainty analysis section which discusses the uncertainties related to each component of the risk assessment in a qualitative or semi-quantitative manner, as described in EPA's Risk Assessment Guidance for Superfund (1989).

<p style="text-align: center;">PHASE II RI/FS RISK ASSESSMENT GAMBELL, ALASKA</p> <p style="text-align: center;">ADEC COMMENTS - Katarina Rutkowski</p>			
Comment No.	Page	Section/ Paragraph	Comment/Recommendation
	1-9	1.4.7/Birds 9	Please provide additional detail concerning the individual waterfowl and upland bird species on the island, since these species are more likely to frequent many of the sites.
	4-1	4.0 10a 10b 10c	<p>Please add EPA's Dermal Exposure Assessment: Principles and Applications (USEPA 1992). Also, please clarify that the bullet titled, "Assessing Dermal Exposure in Soil (EPA, 1995b)," is a Region 3 Technical Guidance document. Please verify the reference in the first bullet (EPA Risk Characterization Program), i.e., "EPA, 1995" rather than "Browner, 1995."</p> <p>Please clarify whether "EPA Region 8 Superfund Technical Guidance No. RA-10: Monte Carlo Simulation"(EPA, 1996c) was used in the preparation of the Gambell risk assessment report.</p> <p>Additional risk assessment guidance documents that may be appropriate for completing the risk assessment work at Gambell include ADEC's Risk Assessment Procedures Manual (ADEC 1996) and EPA Region 10's Supplemental Risk Assessment Guidance for Superfund (USEPA 1996)</p>

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
	4-3	4.2.2/General 16a 16b	<p>Please ensure that the following elements are included in the exposure assessment:</p> <ul style="list-style-type: none"> • characterization of the physical setting • identification of potential exposed populations (current and reasonable anticipated future populations associated with potential land use) • identification of exposure pathways (i.e., selecting complete pathways shown on the conceptual site models and explaining why other pathways are considered to be incomplete) • calculation of exposure point concentrations • identification of exposure parameters selected for each pathway (including source/rationale) • presentation of intake equations and results <p>It appears that many of these elements are missing or incompletely addressed.</p> <p>Please ensure that an exposure assessment has been performed for all sites where COPCs have been identified.</p>
	4-3	4.2.2/1 17a 17b 17c	<p>Please describe who the “residents” are, how many there are, and how close they live to the site.</p> <p>The text states that residents “rarely trap animals to the extent historically trapped.” Please provide a reference for this statement. Also, please describe what kinds of animals were or are trapped in this area and why residents only rarely trap here now.</p> <p>Please clarify what is meant by “a significant distance” when discussing the distance from Site 4B to the cemetery. Please clarify if future expansion of the cemetery into Site 4/Area 4B is possible and whether Site 4/Area B is on the route traveled to reach the cemetery.</p>

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
	4-3	4.2.2/3 18a 18b 18c 18d 18e 18f	<p>Please clarify whether the community was surveyed about potential future land use of this area and clearly understands the implications of land use assumptions in the risk assessment process.</p> <p>In paragraph three, please clarify whether Site 5 or Site 4/Area 4B is being discussed in the first sentence.</p> <p>Please provide more detail on the status of the site (e.g., its former and current owners) and whether other receptors (e.g., workers) are present on the site.</p> <p>This paragraph indicates that surface runoff and tracking of contaminants are potential transport mechanisms. Please clarify where the exposure is postulated to occur: on-site or after being tracked off -site.</p> <p>Please clarify whether downgradient water bodies could be affected by potentially contaminated groundwater discharge.</p> <p>Please include a description of exposure pathways and receptors to be evaluated in the risk assessment, along with the rationale for excluding other pathways.</p>
	4-3	4.2.3 19	Please note that including a toxicity profile for each COPC in the toxicity assessment would be helpful.

<p style="text-align: center;">PHASE II RI/FS RISK ASSESSMENT GAMBELL, ALASKA</p> <p style="text-align: center;">ADEC COMMENTS - Katarina Rutkowski</p>			
Comment No.	Page	Section/ Paragraph	Comment/Recommendation
	4-4	4.2.3.2 <i>009</i> <i>006</i>	<p>Editorial note: This section, entitled "Residential Exposure of Contaminants," is part of the exposure assessment rather than the toxicity assessment. A more clear title for this section appears to be "Estimation of Chemical Intake or Residential Exposure to Contaminants" and a more appropriate location for this section appears to be Section 4.2.2.</p> <p>Please clarify whether the conversion factor is 10×10^{-6} kg/mg or 1×10^{-6} kg/mg. Also, for consistency's sake, since SA is expressed as cm^2/event, the exposure frequency would more clearly be expressed as events/year, rather than days/year.</p>
	4-5	4.2.4.1 <i>019</i> <i>016</i>	<p>Please clarify why 2,3,7,8-TCDD is not included as a carcinogen at Area 4B. Also, lead is considered to be a carcinogen, although no slope factor is available.</p> <p>Please provide a summary of the risk characterization results, rather than referring to Tables 4-6 and 4-7 (for Section 4.2.4.2). Please note that 10^{-6} would more accurately be stated as $1\text{E-}6$ or 1×10^{-6}.</p>
	4-5	4.2.4.3 <i>02</i>	Please specify the site-specific and default exposure factors and input parameters used in the assessment.

<p style="text-align: center;">PHASE II RI/FS RISK ASSESSMENT GAMBELL, ALASKA</p> <p style="text-align: center;">* ADEC COMMENTS - Katarina Rutkowski</p>			
Comment No.	Page	Section/ Paragraph	Comment/Recommendation
		Figure 4-2 25	This site appears to pose a potential future risk to water supplies. Please clarify whether groundwater contaminant transport modeling was performed to evaluate future exposure via the water supply wells.
		Figure 4-3 26a 26b 26c	<p>Please clarify whether children are considered potential receptors at this site.</p> <p>Please provide more detail on the conceptual site model, including contaminant sources, release mechanisms, transport pathways/media transfers, exposure routes, and potential human receptors (both on- and off -site).</p> <p>Please show all major groups of ecological receptors (e.g., small mammals, vegetation, upland birds, etc.) In this figure.</p>

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
	4-10	Table 4-1 27a	<p>Please include a section which provides detailed explanations of the information presented in this table.</p>
		b	<p>Please include a conceptual site model for each of these sites which indicates contamination sources, release mechanisms, transport pathways/media transfers, exposure routes, and potential human receptors (both on- and off-site).</p>
		c	<p>Please provide additional rationale for elimination of all sites but 4B. For example, Site 2 appears to have a complete exposure pathway and chemical concentrations are above benchmarks. Please clarify.</p>
		d	<p>Please clarify why Site 4/Area 4D is shown on the table.</p>
		e	<p>Please clarify the differences between regulatory criteria and benchmark criteria.</p>
		f	<p>Please clarify why Site 5 has no potential exposure points or routes.</p>
		g	<p>Please provide supporting rationale for not evaluating many possible exposure media (e.g., air, groundwater, subsurface soil, biota, surface water and sediment), possible exposure routes (e.g., inhalation of volatiles, ingestion of game, ingestion of groundwater), and possible transport pathways (e.g., leaching to groundwater and discharge to downgradient surface water/sediment, volatilization from soil or groundwater to air).</p>
		h	<p>Please clarify why Site 4D was eliminated from further consideration when PCBs were detected in sediments during the Phase I sampling and concentrations that exceeded the EPA Region 3 risk-based criteria (used in this report) of 0.083 mg/kg. Please note that the risk-based criterion is listed as 1.6 mg/kg in Table 1-1. Please clarify this discrepancy.</p>

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	4-11, 12	Tables 4-2 and 4-3 <i>28a</i> <i>b</i> <i>c</i> <i>d</i> <i>e</i> <i>f</i>	<p>Please include that no EPA toxicity values are available for lead in footnote 7.</p> <p>Based on a review of IRIS, the slope factor basis for arsenic used is water rather than food. Please verify and correct, as necessary.</p> <p>For 2,3,7,8-TCDD, please include the following information: the weight of evidence classification is B2, the type of cancer is respiratory system and liver, and the slope factor basis/source is food/HEAST. Also, please list the compound as 2,3,7,8-TCDD equivalents, rather than 2,3,7,8-TCDD equivalence.</p> <p>Exposure point concentrations are adjusted to obtain 2,3,7,8-TCDD equivalents. If toxic equivalence factors are used, please provide these factors and their source. Please address in Section 4.2.1, paragraph one, last sentence also.</p> <p>Please state whether gastrointestinal (GI) absorption factors were used to derive dermal toxicity factors. If they were, please provide the GI values.</p> <p>Please clarify why "water" values were used for some metals and "food" values were used for others.</p>

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	4-13	Table 4-4 290 b c d e f g h	<p>Please clarify whether the column labeled "midpoint" is really the arithmetic mean. If so, it would be clearer to label the column "mean." Similarly, please clarify whether the column labeled "Chronic Exposure" is the 95% UCL.</p> <p>The soil to skin adherence factor is listed as 1.45; however, EPA's Dermal Exposure Assessment: Principles and Applications (USEPA 1992) recommends 1 mg/cm² as a reasonable upper value for this parameter.</p> <p>Please provide a reference for the skin surface area factor.</p> <p>Please include the value (and reference) used for the fraction ingested. It appears that it was assumed to be 0.5 based on attempts to duplicate the doses calculated in Table 4-5.</p> <p>Please provide supporting rationale for the use of an exposure frequency of only 5 days/year.</p> <p>Please provide supporting rationale for the use of a range of 0 - 365 days/year for the exposure frequency. This range implies that some individuals may be regularly exposed to the site.</p> <p>Please specify whether the 95 percent UCL is based on a normal or log normal distribution.</p> <p>This table indicates that the absorption factor used to quantify dioxin risks is 0.01. EPA's dermal guidance recommends an absorption factor for 2,3,7,8-TCDD of 0.1 to 3 percent. The low end of this range is recommended for soils with high organic carbon content, and the upper end is recommended for soils with low organic content. In the absence of any information on the organic carbon content of the soil, please use the high end of the range (3 percent, or 0.03). Note that the use of 0.03 instead of 0.01 would increase the calculated risk from dermal exposure to dioxin by a factor of 3.</p>

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	4-14	Table 4-5 30	Please verify that the calculations for the chronic dermal dose listed for 2,3,7,8-TCDD equivalents are correct. The term contractor was unable to reproduce the chronic dermal dose based on a spot-check of the dose calculations.
	4-15,16	Tables 4-6 and 4-7 31a b c d	<p>The chronic ingestion dose for 2,3,7,8-TCDD equivalents should be 4.78E-13. The value listed in the table is the oral slope factor.</p> <p>Please clarify the meaning of the column labeled "Chronic Dermal Dose Adjusted for Absorption," i.e., GI absorption or dermal absorption. In this column, please list the oral pathway as "NA."</p> <p>Please clarify whether the oral toxicity values were adjusted from administered to absorbed doses in calculating dermal risks.</p> <p>Please note that according to EPA's Risk Assessment Guidance for Superfund (USEPA 1989), the risk assessment results should be presented to one significant figure.</p>
	6-1	6.0 32	This section states that "the most significant potential human-health risk associated with soil and groundwater contamination at the Gambell Site is contamination of the local drinking water supply located near Site 5." However, Site 5 is not mentioned at all in the text of the risk assessment; rather, it is listed in Table 4-1 as having no potential exposure point, and was therefore excluded from the risk assessment. Please clarify how this potential future human health risk will be addressed.

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		Appendix A 339 b	<p>Although this appendix includes forms titled "Residents Survey - Gambell," it is not clear who was surveyed, when the survey was conducted, and who conducted it. Please provide additional information; a summary of the residents surveyed should be presented in the risk assessment. The survey for Site 4B states that "residents rarely trap because the price is too low." If prices increase in the future, will residents begin trapping more frequently, thereby increasing the exposure frequency? The potential for increased future exposures should be considered.</p> <p>For Site 4D, the text for exposure frequency and duration refers to soil ingestion, direct contact, and local animal consumption; however, the relevant exposure pathway at this site is ingestion of groundwater. Please clarify.</p>